IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

As set forth below, please AMEND claims 1, 6, 11, 16, 21, 26, 30.

1. (CURRENTLY AMENDED) A method of encoding digital data the method comprising:

bandwidth-extension-encoding the digital data, outputting bandwidth-limited data, and generating bandwidth extension information, wherein said bandwidth-extension-encoding includes receiving the digital data, slicing off a portion of the digital data in a high frequency band with the remaining portion of the digital being the bandwidth-limited data, and wherein the bandwidth extension information is information necessary for restoring the sliced portion of the digital data;

encoding the bandwidth-limited data into a hierarchical structure having a base layer and at least one enhancement layer so as to control a bit rate; and

multiplexing the encoded bandwidth-limited data and the bandwidth extension information,

wherein the digital data in the high frequency band is not included in the bandwidth extension information.

2. (ORIGINAL) The method of claim 1, wherein the encoding comprises:

encoding side information corresponding to the base layer;

bit-sliced-encoding a plurality of quantization samples corresponding to the base layer; and

repeating the encoding and bit-slice-encoding for a next enhancement layer until a plurality of predetermined layers are completely encoded.

3. (ORIGINAL) The method of claim 1, wherein the encoding comprises:

encoding side information containing scale factor information and coding mode information corresponding to the base layer;

bit-sliced-encoding a plurality of quantization samples corresponding to the base layer with reference to the coding model information; and

repeating the encoding and bit-sliced-encoding for a next enhancement layer until a plurality of predetermined layers are completely coded.

4. (ORIGINAL)The method of claim 1, wherein the encoded bandwidth-limited data and the bandwidth extension information is multiplexed in such an order that a portion of the encoded bandwidth-limited data corresponding to the base layer is located, the bandwidth extension information is located, and portions of the bandwidth-limited data corresponding to the remaining enhancement layers are located.

5. (ORIGINAL)The method of claim 1, wherein the encoded bandwidth-limited data and the bandwidth extension information is multiplexed in such an order that the bandwidth extension information is located, a portion of the encoded bandwidth-limited data corresponding to the base layer is located, and portions of the bandwidth-limited data corresponding to the remaining enhancement layers are located.

6. (CURRENTLY AMENDED) A method of encoding audio data, the method comprising:

bandwidth-extension-encoding the audio data, outputting bandwidth-limited audio data, and generating bandwidth extension information, wherein said bandwidth-extension-encoding includes receiving the audio data, slicing off a portion of the audio data in a high frequency band with the remaining portion of the audio data being the bandwidth-limited audio data, and wherein the bandwidth extension information is information necessary for restoring the sliced portion of the audio data;

encoding the bandwidth-limited audio data into a hierarchical structure having a base layer and at least one enhancement layer so as to control a bit rate; and

multiplexing the encoded bandwidth-limited audio data and the bandwidth extension information,

wherein the audio data in the high frequency band is not included in the bandwidth extension information.

7. (ORIGINAL)The method of claim 6, wherein the encoding comprises:

encoding side information corresponding to the base layer;

bit-sliced-encoding a plurality of quantization samples corresponding to the base layer;

and

repeating the encoding and bit-sliced-encoding for a next enhancement layer until a plurality of predetermined layers are completely encoded.

8. (ORIGINAL)The method of claim 6, wherein the encoding comprises:

encoding side information containing scale factor information and coding model information corresponding to the base layer;

bit-sliced-encoding a plurality of quantization samples corresponding to the base layer with reference to the coding model information; and

repeating the encoding and bit-sliced-encoding for a next enhancement layer until a plurality of predetermined layers are completely coded.

9. (ORIGINAL)The method of claim 6, wherein the encoded bandwidth-limited audio data and the bandwidth extension information is multiplexed in such an order that a portion of the encoded bandwidth-limited audio data corresponding to the base layer is located, the bandwidth extension information is located, and portions of the bandwidth-limited audio data corresponding to the remaining enhancement layers are located.

10. (ORIGINAL) The method of claim 6, wherein the encoded bandwidth-limited audio data and the bandwidth extension information is multiplexed in such an order that the bandwidth extension information is located, a portion of the encoded bandwidth-limited audio data corresponding to the base layer is located, and portions of the bandwidth-limited audio data corresponding to the remaining enhancement layers are located.

11. (CURRENTLY AMENDED) A method of decoding digital data, the method comprising:

demultiplexing an input bitstream and sampling bandwidth-limited data that is encoded into a hierarchical structure having a base layer and at least one enhancement layer and bandwidth extension information, wherein the ~~bandwidth extension~~bandwidth-limited data is a remaining portion of digital data after digital data in a high frequency band has been sliced off, and wherein the bandwidth extension information is side information necessary for resorting the sliced portion of the digital data;

decoding at least a portion of the bandwidth-limited data corresponding to the base layer; and

generating digital data in at least a portion of the band that is not covered by the decoded portion of the bandwidth-limited data based on the decoded portion of the bandwidth-limited data and with reference to the bandwidth extension information, and then patching the generated digital data to the decoded portion of the bandwidth-limited data,

wherein the digital data in the high frequency band is not included in the bandwidth extension information.

12. (ORIGINAL) The method of claim 11, wherein the input bitstream is demultiplexed in such an order that data corresponding to the base layer is sampled from the input bitstream, the bandwidth extension information is sampled from the input bitstream, and data corresponding to the remaining enhancement layers is sampled from the input bitstream.

13. (ORIGINAL) The method of claim 11, wherein the input bitstream is demultiplexed in such an order that the bandwidth extension information is sampled from the input bitstream, data corresponding to the base layer is sampled from the input bitstream, and data corresponding to the remaining layers is sampled from the input bitstream.

14. (ORIGINAL) The method of claim 11, wherein the decoding comprises:

decoding side information corresponding to the base layer;

bit-sliced-decoding a plurality of quantization samples corresponding to the base layer; and

repeating the decoding and bit-sliced-decoding for a next enhancement layer until a plurality of predetermined layers are completely decoded.

15. (ORIGINAL) The method of claim 11, wherein the decoding comprises:

decoding side information containing scale factor information and coding model information corresponding to the base layer;

bit-sliced-decoding a plurality of quantization samples corresponding to the base layer with reference to the coding model information; and

repeating the decoding and bit-sliced-decoding for a next enhancement layer until a plurality of predetermined layers are completely decoded.

16. (CURRENTLY AMENDED) A method of decoding audio data, the method comprising:

demultiplexing an input audio bitstream and sampling bandwidth-limited audio data that is encoded into a hierarchical structure having a base layer and at least one enhancement layer and bandwidth extension information, wherein the bandwidth-limited audio data is a remaining portion of audio data after audio data in a high frequency band has been sliced off, and wherein the bandwidth extension information is side information necessary for restoring the sliced portion of the audio data;

decoding at least a portion of the bandwidth-limited audio data corresponding to the base layer; and

generating audio data in at least a portion of a band that is not covered by the decoded portion of the bandwidth-limited audio data based on the decoded portion of the bandwidth-limited audio data and with reference to the bandwidth extension information, and then patching the generated ~~digital~~audio data to the decoded portion of the bandwidth-limited audio data,

wherein the audio data in the high frequency band is not included in the bandwidth extension information.

17. (ORIGINAL) The method of claim 16, wherein the input bitstream is demultiplexed in such an order that data corresponding to the base layer is sampled from the input bitstream, the bandwidth extension information is sampled from the input bitstream, and data corresponding to the remaining enhancement layers is sampled from the input bitstream.

18. (ORIGINAL) The method of claim 16, wherein the input bitstream is demultiplexed in such an order that the bandwidth extension information is sampled from the input bitstream, data corresponding to the base layer is sampled from the input bitstream, and data corresponding to the remaining layers is sampled from the input bitstream.

19. (ORIGINAL) The method of claim 16, wherein the decoding comprises:

decoding side information corresponding to the base layer;

bit-sliced-decoding a plurality of quantization samples corresponding to the base layer; and

repeating the decoding and bit-sliced-decoding for a next enhancement layer until a plurality of predetermined layers are completely decoded.

20. (ORIGINAL) The method of claim 16, wherein the decoding comprises:

decoding side information containing scale factor information and coding model

information corresponding to the base layer;

bit-sliced-decoding a plurality of quantization samples corresponding to the base layer with reference to the coding model information; and

repeating the decoding and bit-sliced-decoding for a next enhancement layer until a plurality of predetermined layers are completely decoded.

21 (CURRENTLY AMENDED) An apparatus for encoding digital data, the apparatus comprising:

a bandwidth extension encoder that bandwidth-extension-encodes the digital data, outputs bandwidth-limited data, and generates bandwidth extension information, wherein said bandwidth-extension-encoding includes receiving the digital data, slicing off a portion of the digital data in a high frequency band with the remaining portion of the digital data being the bandwidth-limited data, and wherein the bandwidth extension information is information necessary for restoring the sliced portion of the digital data;

a fine grain scalability encoder that encodes the bandwidth-limited data into a hierarchical structure having a base layer and at least one enhancement layer so as to control a bit rate; and

a multiplexer that multiplexes the encoded bandwidth-limited data and the bandwidth extension information,

wherein the digital data in the high frequency band is not included in the bandwidth extension information.

22. (ORIGINAL) The apparatus of claim 21, wherein the fine grain scalability encoder encodes side information corresponding to the base layer, bit-sliced-encodes a plurality of quantization samples corresponding to the base layer, and bit-sliced-encodes side information and a plurality of quantization samples corresponding to a next enhancement layer until a plurality of predetermined layers are completely encoded.

23. (ORIGINAL) The apparatus of claim 21, wherein the fine grain scalability encoder encodes side information containing scale factor information and coding model information corresponding to the base layer, bit-sliced-encodes a plurality of quantization samples corresponding to the base layer with reference to the coding model information, encodes side information containing scale factor information and coding model information corresponding to a next enhancement layer until a plurality of predetermined layers are

completely encoded, and bit-sliced-encodes a plurality of quantization samples corresponding to the next enhancement layer.

24. (ORIGINAL) The apparatus of claim 21, wherein the multiplexer multiplexes the encoded bandwidth-limited data and the bandwidth extension information in such an order that a portion of the encoded bandwidth-limited data corresponding to the base layer is located, the bandwidth extension information is located, and portions of the bandwidth-limited data corresponding to the remaining enhancement layers are located.

25. (ORIGINAL) The apparatus of claim 21, wherein the multiplexer multiplexes the encoded bandwidth-limited data and the bandwidth extension information in such an order that the bandwidth extension information is located, a portion of the encoded bandwidth-limited data corresponding to the base layer is located, and portions of the bandwidth-limited data corresponding to the remaining enhancement layers are located.

26. (CURRENTLY AMENDED) An Apparatus of encoding audio data, the apparatus comprising:

a bandwidth extension encoder that bandwidth-extension-encodes the audio data, outputs bandwidth-limited audio data, and generates bandwidth extension information;

a fine grain scalability encoder that encodes the bandwidth-limited audio data into a hierarchical structure having a base layer and at least one enhancement layer so as to control a bit rate, wherein said bandwidth-extension-encoding includes receiving the audio data, slicing off a portion of the audio data in a high frequency band with the remaining portion of the audio data being the bandwidth-limited audio data, and wherein the bandwidth extension information is information necessary for restoring the sliced portion of the audio data; and

a multiplexer that multiplexes the encoded bandwidth-limited audio data and the bandwidth extension information,

wherein the audio data in the high frequency band is not included in the bandwidth extension information.

27. (ORIGINAL) The apparatus of claim 26, wherein the fine grain scalability encoder encodes side information corresponding to the base layer, bit-sliced-encodes a plurality of quantization samples corresponding to the base layer, and bit-sliced-encodes side information and a plurality of quantization samples corresponding to a next enhancement layer until a

plurality of predetermined layers are completely encoded.

28. (ORIGINAL) The apparatus of claim 26, wherein the fine grain scalability encoder encodes side information containing scale factor information and coding model information corresponding to the base layer, bit-sliced-encodes a plurality of quantization samples corresponding to the base layer with reference to the coding model information, encodes side information containing scale factor information and coding model information corresponding to a next enhancement layer until a plurality of predetermined layers are completely encoded, and bit-sliced-encodes a plurality of quantization samples corresponding to the next enhancement layer.

29. (ORIGINAL) The apparatus of claim 26, wherein the multiplexer multiplexes the encoded bandwidth-limited data and the bandwidth extension information in such an order that a portion of the encoded bandwidth-limited data corresponding to the base layer is located, the bandwidth extension information is located, and portions of the bandwidth-limited data corresponding to the remaining enhancement layers are located.

30. (CURRENTLY AMENDED) An apparatus for decoding digital data, the apparatus comprising:

a demultiplexer that demultiplexes and input bitstream and samples bandwidth-limited data that is encoded into a hierarchical structure having a base layer and at least one enhancement layer and bandwidth extension information, wherein the ~~bandwidth extension~~bandwidth-limited data is a remaining portion of digital data after digital data in a high frequency band has been sliced off, and wherein the bandwidth extension information is side information necessary for restoring the sliced portion of the digital data;

a fine grain scalability decoder that decodes at least a portion of the sampled bandwidth-limited data corresponding to the base layer; and

a bandwidth extension decoder that generates digital data in at least a portion of a band that is not covered by the decode portion of the bandwidth-limited data based on the decoded portion of the bandwidth-limited data and with reference to the bandwidth extension information and ~~the~~then patches the generated digital data to the decoded portion of the bandwidth-limited data,

wherein the digital data in the high frequency band is not included in the bandwidth extension information.

31. (ORIGINAL) The apparatus of claim 30, wherein the fine grain scalability decoder decodes side information corresponding to the base layer, bit-sliced-decodes a plurality of quantization samples corresponding to the base layer, and decodes side information corresponding to a next enhancement layer until a plurality of predetermined layers are completely decoded, and bit-sliced-decodes a plurality of quantization samples corresponding to the next enhancement layer.

32. (ORIGINAL) The apparatus of claim 30, wherein the fine grain scalability decoder decodes side information containing scale factor information and coding model information corresponding to the base layer, bit-sliced-decodes a plurality of quantization samples corresponding to the base layer with reference to the coding model information, decodes side information corresponding to a next enhancement layer until a plurality of predetermined layers are completely decoded, and bit-sliced-decodes a plurality of quantization samples corresponding to the next enhancement layer with reference to the coding model information.

33. (ORIGINAL) The apparatus of claim 30, wherein the demultiplexer demultiplexes the input bitstream in such an order that data corresponding to the base layer is sampled from the input bitstream, the bandwidth extension information is sampled from the input bitstream, and data corresponding to the remaining enhancement layers is sampled from the bitstream.

34. (CURRENTLY AMENDED) An apparatus for decoding audio data, the apparatus comprising:

a demultiplexer that demultiplexes an input audio bitstream and samples bandwidth-limited audio data that is encoded into a hierarchical structure having a base layer and at least one enhancement layer and bandwidth extension information, wherein the ~~bandwidth extension~~bandwidth-limited data is a remaining portion of ~~digital~~audio data after audio data in a high frequency band has been sliced off, and wherein the bandwidth extension information is side information necessary for restoring the sliced portion of the digital data;

a fine grain scalability decoder that decodes at least a portion of the bandwidth-limited audio data corresponding to the base layer; and

a bandwidth extension decoder that generates audio data in at least a portion of a band

that is not covered by the decoded portion of the bandwidth-limited audio data based on the decoded portion of the bandwidth-limited audio data and with reference to the bandwidth extension information and then patches the generated audio data to the decoded portion of the bandwidth-limited audio data,

wherein the audio data in the high frequency band is not included in the bandwidth extension information.

35. (ORIGINAL) The apparatus of claim 34, wherein the fine grain scalability decoder decodes side information corresponding to the base layer, bit-sliced-decodes a plurality of quantization samples corresponding to the base layer, and decodes side information corresponding to a next enhancement layer until a plurality of predetermined layers are completely decoded, an bit-sliced-decodes a plurality of quantization samples corresponding to the next enhancement layer.

36. (ORIGINAL) The apparatus of claim 34, wherein the demultiplexer demultiplexes the input bitstream in such an order that data corresponding to the base layer is sampled from the input bitstream, the bandwidth extension information is sampled from the input bitstream, and data corresponding to the remaining enhancement layers is sampled from the bitstream.

37. (PREVIOUSLY PRESENTED) The apparatus of claim 34, wherein the demultiplexer demultiplexes the audio input bitstream in such an order that the bandwidth extension information is sampled from the input audio bitstream, data corresponding to the base layer is sampled from the input audio bitstream, and data corresponding to the remaining layers is sampled from the input audio bitstream.